

REMARKS

Claims 6, 9, 22, 25, 38 and 41 have been amended. Claims 1-3, 6, 9, 17-19, 22, 25, 33-35, 38, 41 and 49-52 remain pending in the present application. Applicant reserves the right to pursue the original and other claims in this and other applications.

Claims 6, 9, 22, 25, 38 and 41 stand rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which Applicant regards as the invention. Applicant has amended the claims to address the concerns of the Office Action. Accordingly, Applicant respectfully requests that the rejection be withdrawn and the claims allowed.

Claims 1-3, 6, 9, 17-19, 22, 25, 33-35, 38, 41 and 49-52 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Merrill ("the Merrill 2001 publication") in view of Merrill (U.S. Patent No. 6,940,551) ("the '551 patent"). The rejection is respectfully traversed.

Claim 1 recites an active pixel sensor comprising a plurality of pixels having "a reset portion for resetting a photosensitive element of [a] pixel . . . ; a first storage circuit for storing a reset voltage level of [the] photosensitive element . . . and a second storage circuit for storing a voltage level of [the] photosensitive element after an integration period." Claim 1 further recites that the first storage circuit comprises "[a] first sample and hold circuit [having] a first sample and hold transistor switchably coupling a first terminal of a first storage capacitor with [the] reset portion," and that the second storage circuit comprises "[a] second sample and hold circuit [having] a second sample and hold transistor switchably coupling a first terminal of a second storage capacitor with [the] reset portion." Claims 17, 33 and 49 contain similar limitations.

Applicant acknowledges that the Merrill 2001 publication relates to “intra-pixel” circuitry that reduces kTC noise, however, the publication does not teach or suggest a plurality of pixels having “a reset portion for resetting a photosensitive element of [a] pixel . . . ; a first storage circuit for storing a reset voltage level of [the] photosensitive element . . . and a second storage circuit for storing a voltage level of [the] photosensitive element after an integration period,” as recited in claim 1. The Merrill 2001 publication, at most, teaches a pixel having a reset portion and only one storage circuit. In no way, does the Merrill 2001 publication refer to a pixel having two storage circuits, much less, two storage circuits each comprising a sample and hold circuit having a sample and hold transistor switchably coupling a terminal of a storage capacitor with the reset portion.

In one aspect of the claimed invention, as shown in FIG. 2, each pixel 200 contains a charge collection portion and two charge storage portions for storing the reset voltage level and the voltage level of the photosensitive element after an integration period, respectively. (Specification at paragraph [0040]). Moreover, each sample and hold circuit contains a sample and hold transistor, a first terminal of which is coupled to the column bus and a second terminal of which is coupled to a storage capacitor. (Specification at paragraph [0038] and [0039]).

Applicant submits that the Merrill 2001 publication fails to teach or suggest “a first storage circuit for storing a reset voltage level of [the] photosensitive element . . . and a second storage circuit for storing a voltage level of [the] photosensitive element after an integration period,” or a first storage circuit comprising “[a] first sample and hold circuit [having] a first sample and hold transistor switchably coupling a first terminal of a first storage capacitor with [the] reset portion,” and a second storage circuit comprising “[a] second sample and hold circuit [having] a second sample and

hold transistor switchably coupling a first terminal of a second storage capacitor with [the] reset portion."

The Office Action attempts to cure the deficiencies of the Merrill 2001 publication by combining it with the '551 patent. The Office Action cites the '551 patent as teaching a pixel containing a reset noise cancellation circuit being repeated in an array of arbitrary size. (Office Action at page 3). Applicant respectfully submits, however, that the '551 patent does not cure the above-noted shortcomings of the Merrill 2001 publication.

Even assuming the statements of the Office Action regarding the '551 patent were true, which Applicant does not concede, the '551 patent does not teach or suggest "a first storage circuit for storing a reset voltage level of [the] photosensitive element . . . and a second storage circuit for storing a voltage level of [the] photosensitive element after an integration period." Nor does the '551 patent teach or suggest a first storage circuit comprising "[a] first sample and hold circuit [having] a first sample and hold transistor switchably coupling a first terminal of a first storage capacitor with [the] reset portion," and a second storage circuit comprising "[a] second sample and hold circuit [having] a second sample and hold transistor switchably coupling a first terminal of a second storage capacitor with [the] reset portion."

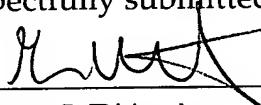
Consequently, the Merrill 2001 publication and the '551 patent, even when considered in combination, fail to teach or suggest all limitations of claims 1, 17, 33 and 49. Claims 2, 3, 6 and 9 depend from claim 1 and should be allowable along with claim 1. Claims 18, 19, 22 and 25 depend from claim 17 and should be allowable along with claim 17. Claims 34, 35, 38 and 41 depend from claim 33 and should be allowable along with claim 33. Claims 50-52 depend from claim 49 and should be allowable along with claim 49.

Therefore, Applicant respectfully submits that the rejection be withdrawn and claims 1-3, 6, 9, 17-19, 22, 25, 33-35, 38, 41 and 49-52 be allowed.

In view of the above, Applicant believes the pending application is in condition for allowance.

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